

REMARKS

This amendment is responsive to the November 24, 2008 Office Action. All the claims, including amendments, are shown in the previous section.

Applicant respectfully requests reconsideration of the application, withdrawal of all rejections, and allowance of the application in view of the amendments and remarks below.

Amendments to the Claims

Claims 1, 2, 4-8, and 10-20 are pending in the application. Claims 1, 2, 10 – 12, 14, and 16 - 18 are amended without prejudice. Specifically:

Claims 1, 2, 12, and 14 are amended to indicate the composition is a concentrate. This amendment can be supported by Applicant's specification at, for example, page 6, lines 5-8 and Table 1.

Claims 1 and 2 are further amended to indicate the acid is either hydrochloric acid or phosphoric acid. This amendment can be supported by Applicant's specification at, for example, page 6, line 6 and line 9.

Claims 1, 12, and 14 are further amended to indicate the concentrate mixture is "diluted in water". This amendment can be supported by Applicant's specification at, for example, page 6, line 6.

Claims 10 and 16 are amended to indicate the pH of the diluted mixture (after adding water to the mixture of claim 1) or tank mix is between 1 and 5 or 2 and 4, respectively. This amendment can be supported by Applicant's specification at, for example, page 2, lines 4 and 12-13.

Claims 11 and 17 are amended to indicate the pH of the application solution formed in step (b) of claim 2 is between 1 and 5 or 2 and 4, respectively. This amendment can be supported by Applicant's specification at, for example, page 2, lines 4 and 12-13.

Claim 18 is amended to indicate the rate of application is about 3 to about 30 gallons per acre. This amendment can be supported by Applicant's specification at, for example, page 6, lines 7-8.

Applicant believes these changes introduce no new matter.

Applicant reserves the right to file divisional or continuation applications directed to subject matter cancelled herein.

Rejection of Claims 1-2, 4-8, and 10-20 under 35 U.S.C. § 112, First Paragraph

The Examiner rejects claims 1-2, 4-8, 10-11, and 16-20 as reciting 1-40% hydrochloric acid, nitric acid, phosphorus acid, polyphosphoric acid, and perchloric acid. The Examiner asserts the 1-40% amount for these acids was not originally disclosed. Applicant in no way acquiesces to the rejection, but in the interest of expediting prosecution, Applicant has amended the claims to address the Examiner's concerns.

The Examiner rejects claims 1, 10-16, and 19 for reciting a 1-40% acid + 10-20% phosphonic acid compound composition applied directly to a cotton plant. The Examiner points out that, according to the disclosure, the concentrate is mixed with water prior to application and thus must reflect that in the claims. Applicant believes the claims as amended address the Examiner's concerns.

The Examiner rejects claims 10 and 11 for reciting "a pH of between 1 and 5" and asserts that pH 5 was not originally disclosed. Applicant has amended the claims to reflect the pH of the application solution (the mixture after dilution in water) is between 1 and 5. This pH range for the diluted pesticide is supported by Applicant's specification at, for example, page 2, lines 12 and 13.

The Examiner rejects claim 18 for reciting "about 3 to about 32 gallons per acre" and asserts there is insufficient descriptive support for this rate. Applicant in no way acquiesces to the rejection, but in the interest of expediting prosecution, claim 18 is amended.

Rejection of Claims 1, 10, 12-16, and 19 under 35 U.S.C. § 112, Second Paragraph

The Examiner rejects claims 1, 10, 12-16, and 19 as indefinite, in particular, because the Examiner asserts it is not clear whether the concentrate or a diluted formulation is being claimed.

Claims 1, 12, 14, and 16 are amended make the distinction between the concentrate and diluted formulation more clear.

Rejection of Claims 1-2, 4-8, and 10-11, and 16-20 under 35 U.S.C. § 103(a)

The Examiner rejects claims 1-2, 4-8, 10-11, and 16-20 as obvious over CN 1252940 in view of The Agrochemicals Handbook, Farm Chemicals Handbook '98, Fritz et al. (U.S. 3,879,188), and CABA abstract 80:49077, further in view of the Ethephon publication and Imidacloprid publication. Applicant respectfully requests withdrawal of this rejection.

The Examiner bears the burden of establishing a *prima facie* case of obviousness under 35 U.S.C. § 103. In determining obviousness, one must focus on Applicant's invention as a whole. *Symbol Technologies Inc. v. Opticon Inc.*, 19 USPQ2d 1241,1246 (Fed. Cir. 1991). The primary inquiry is:

whether the prior art would have suggested to one of ordinary skill in the art that this process should be carried out and would have had a reasonable likelihood of success . . . Both the suggestion and the expectation of success must be found in the prior art, not in the applicant's disclosure.

In re Dow Chemical, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). To establish obviousness, both the elements of the claimed invention plus the motivation to combine the elements must be present in the prior art. *Ex parte Hiyamizu*, 10 USPQ2d 1393, 1394 (PTO Bd. App. Intf., 1988).

Applicant's claim 1 as amended is directed to a composition consisting essentially of a concentrate mixture of (a) hydrochloric acid or phosphoric acid and (b) 10 to 20% phosphonic compounds such as ethephon. Though CN 1252940 (hereinafter, '940) mentions a range from 1-50% ethephon, every example uses 40% ethephon (see '940 translation, Examples 1 through 3 and Table 2) - no specific examples fall with Applicant's claimed range of 10% to 20%. Thus, no teaching is provided with respect to the 10% to 20% ethephon as used by the Applicant. For at least this reason, Applicant's claim 1 is non-obvious over the '940 publication alone.

Further, the '940 publication mentions a mixture of ethephon and imidacloprid prepared by dissolving imidacloprid in acid (sulfuric or hydrochloric acid) prior to addition of the ethephon and cosolvent. As the Examiner points out, the '940 publication does not expressly disclose the combination of ethephon and an acid at a pH between 1 and 3. In fact, it is understood that any acid mentioned in the publication is used for the purpose of dissolving imidacloprid which teaches away from Applicant's claimed liquid mixture of phosphonic compounds and an acid. Thus, there would be no expectation that the use of acid in the absence of imidacloprid would be beneficial for any purpose, much less that the use of a phosphonic compound formulated with hydrochloric acid or phosphoric acid would be more efficacious and efficient than the phosphonic compound alone. Thus, for at least this reason, Applicant's claim 1 is non-obvious over the '940 publication alone.

Applicant's claim 2 as amended is directed to a method of increasing efficiency and efficacy of phosphonic compounds by preparing a concentrate composition consisting essentially of (i) hydrochloric acid or phosphoric acid and (ii) 10 to 20% phosphonic compounds, mixing

the composition with water to form an application solution, and applying the application solution to a cotton plant thereby controlling cotton defoliation. As discussed above with respect to claim 1, at least because the '940 publication only provides Examples of compositions containing only 40% ethephon and fails to teach Applicant's claimed percentage ethephon, and/or because the '940 publication provides no expectation that the use of acid in the absence of imidacloprid would be beneficial for any purpose, much less that the use of a phosphonic compound formulated with hydrochloric acid or phosphoric acid would be more efficacious and efficient than the phosphonic compound alone, Applicant's claim 2 is non-obvious.

The Agrochemicals Handbook fails to mitigate the deficiency of the '940 publication. This publication merely mentions ethephon is stable in aqueous solutions having pH values less than 3.5 and is useful to regulate phases of plant growth. However, knowledge that addition of an acid to ethephon promotes stability fails to teach or suggest a phosphonic compound formulated with hydrochloric acid or phosphoric acid would be more efficacious and efficient than the phosphonic compound alone. Thus, alone or in combination with the '940 publication, Applicant's claim 1 is non-obvious for at least the reasons described above. Likewise, claim 2 is non-obvious for at least the reasons described above.

Similarly, the Farm Chemical Handbook fails to teach or suggest the element lacking in the '940 publication. The Farm Chemical Handbook mentions ethephon as a plant growth regulator having stability under pH 3. Again, knowledge that addition of an acid to ethephon promotes stability fails to teach or suggest a phosphonic compound formulated with hydrochloric acid or phosphoric acid having greater efficacy and efficiency than the phosphonic compound alone.

The Examiner cites Fritz *et al.* as teaching addition of an acid to ethephon for stability. Fritz *et al.*, column 9, last sentence, through column 10, line 6, reads as follows:

The phosphonic derivatives may be stabilized against water or moisture incorporating an acid therein to insure that the pH is not greater than five, with the term "acid" being used to cover any material which will impart the desired pH value. Also, an appropriate buffering-agent can be used to maintain the pH of the composition at five or less.

Applicant reiterates that as pointed out in the October 19, 2007 Communication, it was not well known that phosphonic compounds formulated as a concentrate with acid could be reliably diluted into an aqueous formulation for direct application to a cotton plant. Acids used

to modify pH of spray solutions are added separately to the spray solution by the end user. See Volgas et al. (U.S. 2007/0037707). In other words, an acid is used as a “tank mix additive”. See Volgas et al., paragraphs 4-7. Fritz et al. fail to expressly disclose the combination of phosphonic compounds with hydrochloric acid or phosphoric acid as a concentrate. Of the numerous examples provided, none give any hint at a need for addition of an acid at any point. Further, Fritz et al. do not mention a concentrate mixture of a phosphonic compound formulated with hydrochloric acid or phosphoric acid having greater efficacy and efficiency than the phosphonic compound alone. Thus, Fritz et al. fail to make up the deficiency in the ‘940 publication.

The Examiner cites CABA abstract 80:49077 as purportedly mentioning “foliar spray of ethephon for boll opening and increasing the yield of cotton”. This publication fails to teach or suggest a phosphonic compound formulated with hydrochloric acid or phosphoric acid having greater efficacy and efficiency than the phosphonic compound alone.

Thus, for at least the reasons discussed above, claim 1 as amended is non-obvious over the cited publications either alone or in combination.

Claims 10, 16, and 19 depend from claim 1 and are non-obvious over the cited publications alone or in combination for at least the same reasons as discussed above with respect to claim 1.

Claim 2 as amended is non-obvious over the cited publications either alone or in combination for at least the reasons discussed above.

Claims 4, 5, 8, 11, 17, 18, and 20 depend from claim 2 and are non-obvious over the cited publications alone or in combination for at least the same reasons as discussed above with respect to claim 2.

Rejection of Claims 1-2, 4-8, and 10-20 under 35 U.S.C. § 103(a)

The Examiner rejects claims 1-2, 4-8, and 10-20 as obvious over Fritz et al. in view of CABA abstract 80:49077, The Agrochemicals Handbook, Farm Chemicals Handbook '98, CN1252940, and the Ethephon publication.

The Examiner asserts the difference between Applicant's claims and Fritz et al. is that the latter does not expressly disclose the combination of phosphonic compounds and an acid. As stated in the last communication, Applicant agrees that this is one difference and adds that at the

time the application was filed, it was understood that addition of acid to ethephon was performed in the tank rather than as a formulation. This was true some even three years later when Volgas et al. was filed. The additional step of adding the acid to the tank mix *inconveniences* the end-user. It was Applicant who recognized this was a problem, an inefficiency, and Applicant who determined in the face of contrary evidence that certain acids when added to phosphonic compounds as a pre-mix not only improved stability but also improved efficacy and efficiency. So, in opposition to the Examiner's assertion that one of skill in the art would have been motivated to co-formulate ethephon with an acid in order to maintain a pH below 3.5 or less, Applicant's determination that mineral acids in formulation with phosphonic acids improved stability as well as efficacy and efficiency is actually surprising and certainly non-obvious.

The Examiner admits that the '940 publication does not expressly disclose formulations containing phosphonic compounds and an acid having a pH between 1 and 3. Applicant points out that, in addition, acid was added to formulation in the '940 publication solely to dissolve the imidacloprid, an agent not even mentioned in Applicant's claims. Applicant is not attempting to ignore this publication, but rather points out that when used as a § 103(a) reference, the '940 publication is deficient at least for the purpose of teaching the use of an acid in a formulation lacking imidacloprid.

CABA abstract 80:49077 mentions a foliar spray purportedly effective in increasing boll opening and yield in cotton plants. No teaching or suggestion is provided regarding formulating phosphonic compounds with hydrochloric acid or phosphoric acid.

The Agrochemicals Handbook mentions ethephon is involved in regulating plant growth processes and is stable in aqueous solutions where the pH is less than 3.5. No teaching or suggestion is provided regarding formulating phosphonic compounds with hydrochloric acid or phosphoric acid.

The Farm Chemicals Handbook mentions use of ethephon as a plant growth regulator and mentions stability of the compound when the pH is 3 or less. No teaching or suggestion is provided regarding formulating phosphonic compounds with hydrochloric acid or phosphoric acid.

As previously discussed, Applicant's claim 1 as amended is directed to a concentrate mixture of one or more phosphonic compounds formulated with hydrochloric acid or phosphoric acid. This formulation is prepared as a complete pre-mix and is diluted in water for direct

application to a cotton plant. At least because none of the above publications, alone or in combination, teach or suggest this combination, claim 1 is not obvious.

Claims 10, 16, and 19 depend from claim 1 and are non-obvious for at least the same reasons as discussed above with respect to claim 1.

Applicant's claim 2 as amended is directed to a method of increasing efficiency and efficacy of phosphonic compounds by formulating a concentrate of phosphonic compounds with hydrochloric acid or phosphoric acid. The concentrate mixture can be mixed with water to form an application solution which is applied to a cotton plant to control defoliation. At least because none of the above publications, alone or in combination, teach or suggest the combination of one or more phosphonic compounds with hydrochloric acid or phosphoric acid, claim 2 is not obvious.

Claims 4-8, 11, 17, 18, and 20 depend from claim 2 and are non-obvious for at least the same reasons as discussed above with respect to claim 2.

Applicant's claim 12 as amended is directed to a concentrate mixture of one or more phosphonic compounds formulated with phosphoric acid. The concentrate is diluted in water for direct application to a cotton plant. At least because none of the above publications, alone or in combination, teach or suggest this combination, claim 12 is not obvious.

Claim 13 depends from claim 12 and is non-obvious for at least the same reasons as discussed above with respect to claim 12.

Applicant's claim 14 as amended is directed to increasing efficiency and efficacy of phosphonic compounds in controlling cotton plant defoliation by formulating phosphonic compounds in combination with phosphoric acid as a concentrate mixture. At least because none of the above publications, alone or in combination, teach or suggest this combination, claim 14 is not obvious.

Claim 15 depends from claim 14 and is non-obvious for at least the same reason as discussed above with respect to claim 14.

For the reasons set forth above, Applicant respectfully submits the claims as filed are allowable over the art of record and reconsideration and issuance of a notice of allowance are

respectfully requested. If it would be helpful to obtain favorable consideration of this case, the Examiner is encouraged to call and discuss this case with the undersigned.

This constitutes a request for any needed extension of time and an authorization to charge all fees therefor to deposit account No. 19-5117, if not otherwise specifically requested. The undersigned hereby authorizes the charge of any fees created by the filing of this document or any deficiency of fees submitted herewith to deposit account No. 19-5117.

Respectfully submitted,

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